CLAIMS

At the time of the Action:

Pending Claims: 1-29

Withdrawn Claim: 30

Canceled Claims: 31-34

After this Response:

Pending Claims: 1-29 and 35

Amended Claims: 1-16, 28 and 29

Withdrawn: None

Canceled Claims: 30-34

New Claim: 35

1. **(Currently Amended)** A ~~computer-implemented~~ system ~~for approximating a solution to a linear program to analyze network data routes for data dissemination~~, comprising: ~~the following computer components stored in a computer readable media and executable by one or more processors:~~

a server including at least one processor and at least one computer-readable storage medium, the computer-readable storage medium comprising:

a component that receives a subset of data corresponding to the linear program;

a ~~user input~~ component that receives a user input for a selection of at least one of the subset of data, the at least one of the subset of data associated with one or more of cost, length, bandwidth or latency; and

an analysis component that adapts linear programming optimization algorithms, based on separation oracle(s), to work with an approximate separation

oracle and the at least one of the subset of data to solve a primal and dual linear program within a same approximation factor as the approximate separation oracle.

2. **(Currently Amended)** The ~~computer-implemented~~ system of claim 1, wherein the analysis component resolves an optimization of the dual linear program to solve for an optimization of the primal linear program.

3. **(Currently Amended)** The ~~computer-implemented~~ system of claim 2, wherein the optimization of the dual linear program comprises an approximate range between R^* and αR^*; wherein further α is the approximation factor and R^* is a minimum value produced by a binary search of an equality function produced *via* an ellipsoid algorithm utilizing the approximate separation oracle.

4. **(Currently Amended)** The ~~computer-implemented~~ system of claim 3, wherein the optimization of the primal linear program comprises a value less than or equal to αR^*.

5. **(Currently Amended)** The ~~computer-implemented~~ system of claim 1, wherein the approximate separation oracle comprises an approximation algorithm for a minimum Steiner tree problem.

6. **(Currently Amended)** The ~~computer-implemented~~ system of claim 1, wherein the approximate separation oracle is utilized in conjunction with an ellipsoid method to obtain a resolution for the primal and dual linear programs.

7. **(Currently Amended)** The ~~computer-implemented~~ system of claim 6, wherein the resolution produces an approximation algorithm for a fractional Steiner tree packing problem.

8. **(Currently Amended)** The ~~computer-implemented~~ system of claim 1, wherein the analysis component utilizes primal and dual linear programs representative of a fractional Steiner tree packing problem.

9. **(Currently Amended)** The ~~computer-implemented~~ system of claim 1, wherein the primal linear program comprises a representation of an aspect of at least one computer network system.

10. **(Currently Amended)** The ~~computer-implemented~~ system of claim 1, wherein the subset of data comprises parametric data of a networked system.

11. **(Currently Amended)** The ~~computer-implemented~~ system of claim 10, wherein the parametric data comprises capacity data relating to at least one link of the networked system.

12. **(Currently Amended)** The ~~computer-implemented~~ system of claim 10, wherein the parametric data comprises length data relating to at least one link of the networked system.

13. **(Currently Amended)** The ~~computer-implemented~~ system of claim 10, wherein the parametric data comprising cost data relating to at least one link of the networked system.

14. **(Currently Amended)** The ~~computer-implemented~~ system of claim 10, wherein the parametric data comprises latency data relating to at least one link of the networked system.

15. **(Currently Amended)** The ~~computer-implemented~~ system of claim 1, wherein the analysis component has an asymptotic approximation factor of about 1.59.

16. **(Currently Amended)** A computer-implemented method, ~~for approximating a distribution optimization for network data routes stored in a readable storage medium having computer-executable instructions, that, when executed, causes one or more processors to perform the following~~ implemented by one or more processors, comprising:

obtaining desired parameter data from a networked system for utilization in determining an optimum distribution, the desired parameter data being pre-selected;

receiving a selection of at least one of the desired parameter data;

determining the optimum distribution utilizing an approximate separation oracle and the at least one of the desired parameter data in an ellipsoid method to solve primal and dual linear programs that represent a fractional Steiner tree packing problem.

17. **(Previously Presented)** The computer-implemented method of claim 16, further comprising:

obtaining the primal linear program for Steiner trees in the networked system;

determining the dual linear program based on the primal linear program, wherein a separation oracle of the dual linear program equates to a Steiner tree problem which is NP-hard to solve;

selecting a known approximation method for resolving a minimum weight Steiner tree problem;

utilizing the known approximation method as the approximate separation oracle in the ellipsoid method to provide a resolution to the dual linear program; and

employing the resolution of the dual linear program to provide a solution for the primal linear program to facilitate in finding an approximate maximum fractional packing of the Steiner trees in the networked system.

18. **(Previously Presented)** The computer-implemented method of claim 17, wherein the known approximation method comprising a polynomial time α -approximation algorithm for finding the minimum weight Steiner tree.

19. **(Previously Presented)** The computer-implemented method of claim 18, further comprising:

employing a binary search to find a smallest value of R for which the dual linear program is feasible; where R represents a solution to the ellipsoid method utilizing the approximate separation oracle;

solving the dual linear program such that R^* is a minimum feasible solution and αR^* is a maximum feasible solution; where α is a performance factor of the approximate separation oracle;

setting the solution for the primal linear program equal to ≤ αR^*; and

providing an approximated optimization solution for the maximum fractional packing of the Steiner trees based on the solution for the primal linear program.

20. **(Previously Presented)** The computer-implemented method of claim 16, wherein the approximate separation oracle having a performance ratio within approximately a 1.6 factor.

21. **(Previously Presented)** The computer-implemented method of claim 16, wherein the networked system comprises a computer network.

22. **(Previously Presented)** The computer-implemented method of claim 21, wherein the computer network comprises the Internet.

23. **(Previously Presented)** The computer-implemented method of claim 16, wherein the desired network parameters include at least one from the group consisting of cost, length, capacity, and latency of links in the networked system.

24. **(Previously Presented)** The computer-implemented method of claim 16, further comprising:

utilizing the optimum distribution to efficiently transmit non-streaming data from a source node to a receiving node *via* the networked system.

25. **(Previously Presented)** The computer-implemented method of claim 16, wherein the optimum distribution incorporates a broadcast transmission by the source node.

26. **(Previously Presented)** The computer-implemented method of claim 16, wherein the optimum distribution incorporates a multicast transmission by the source node.

27. **(Previously Presented)** The computer-implemented method of claim 16, wherein the optimum distribution incorporates a unicast transmission by the source node.

28. **(Currently Amended)** A ~~computer-implemented system that facilitates approximating a solution to a linear program to analyze network data routes for data dissemination, comprising the following components stored in a~~ computer readable storage medium having computer-executable instructions, that, when executed, cause one or more ~~and executable by a processor~~ processors to perform operations comprising:

~~means for~~ approximating an algorithmic solution to a minimum weight Steiner tree problem with a known approximation method;

~~means for~~ receiving a selection of at least one parameter corresponding to the linear program, the selection associated with one or more of cost, length, bandwidth or latency;

collecting data associated with the at least one parameter, the data comprising a link capacity of a network data route for data dissemination;

~~means for~~ obtaining an approximate separation oracle for the algorithmic solution, the approximate separation oracle being the known approximation method and indicating whether a solution is feasible or not; and

~~means for~~ utilizing the approximate separation oracle and the data associated with the at least one parameter in an ellipsoid method to resolve primal and dual linear

programs representative of a fractional Steiner packing tree problem to provide an optimal ~~distribution for a networked system~~ data dissemination for the network data route.

29. **(Currently Amended)** The ~~computer-implemented system~~ computer readable storage medium of claim 28, wherein the networked system comprises at least one computer network.

30. **(Canceled)**

31. **(Canceled)**

32. **(Canceled)**

33. **(Canceled)**

34. **(Canceled)**

35. **(New)** The computer readable storage medium of claim 29,

wherein the at least one parameter comprises a bandwidth capacity of a plurality of links between a source node and one or more receiving nodes of the network,

wherein providing the optimal data dissemination for the network data route comprises providing an optimal distribution path, based at least in part on the bandwidth capacity, for passing data from the source node to the one or more receiving nodes.